Harnessing non-conventional Energy Sources

1294. SHRI S. K. T. RAMACHANDRAN ; Will the PRIME MINISTER be pleased to state ;

(a) what are the different systems which are in vogue in India to harness non-conventional energy sources;

(b) how much power is generated normally in a year under each system;

(c) what further steps are being taken to harness non-conventional energy sources more effectively ?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES WITH ADDITIONAL CHARGE OF THE MINISTER OF STATE OF THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR) : (a) and (b) For harnessing non-conventional energy sources, biogas plants, improved chulhas, solar thermal energy systems, solar photovoltaic systems, wind energy systems, small hydro power installation, alternate fuel operated vehicles and bio-energy systems are in vogue in the country. Status of system/programme-wise non-conventional energy installations and expected energy generation/savings are given at Statement I *(see* below).

(c) For the development of non-conventional energy sources during 1992-93 and 8th Plan, it is proposed to extend financial assistance for R&D, demonstration and extension programmes in the field of Biogas, Improved Chulha, Solar Thermal, Solar Photovoltaic, Biomass, Bio-energy. Small Hydro Power, New Technology, Alternate Fuel, and Ocean Energy, to be taken up through various scientific and technical Institutes and State Nodal Agencies. The physical targets for the installation of various types of non-conventional energy systems and devices throughout the country are to be generally stepped up during 8th Five Year Plan than in the 7th Plan. Programme-wise proposed financial Central outlay and physical targets are given at Statement II. *(see* below).

In addition to budgetary support, efforts have been made by the Government to mobilise resources from the World Bank and other bilateral agencies. It has been possible to receive commitment to the tune of US $ 145 million for exploiting the potential in small hydro, wind energy and solar photovoltaics for the Renewable Resources Development Project. The World Bank (International Development Agency), Global Environment Facility (GEF) and the Government of Switzerland and are participating in financing this project. In addition, Danish Government (DANIDA) assistance for the project is also under consideration. Through the assistance likely to be received under the above project and to be or lent to private enterpre-neures and others through Indian Renewable Energy Development Agency (IREDA) it is envisaged to add an aggregated capacity each of 100 MW through small hydro! projects, 85 MW through wind farms and 2.5 MW through solar photovoltaic systems.

Statement-I

System/Programme-wise Installations and expected Energy Generation! Savings from various Non-Coventional Energy Programmes.

Sl. No.	System/Programme	Cumulative Achievement (31-3-92)	Expected equivalent Energy saving per year		
			Wood	Petroleum	Elecy.
			(Million Tonnes)		(MW)
1	2	3	4	5	6
1.	Family size biogas plants (Nos. in lakh) . . .	15.75	1.418917	—	—
2.	Community/Institutional Biogas Plants (Nos.) . . .	820	0.006508	0.001337	—

1	2	3	4	5	6
3.	Improved Chulhas (Nos. in lakh)	125.30	8.771	—	—
4.	Solar Thermal Energy Systems (Area in lakh m2)	2.23	—	0.022255	—
5.	Solar Cookers (Nos. in lakhs)	2.27	—	0.060276	—
6.	Photovoltaic Water Pumps (Nos.)	740	—	0.000244	—
7.	Photovoltaic Power Units (kWp)	244.4	—	—	0.24
8.	Photovoltaic Community (Nos.) lights/TV and community facilties	706	—	—	0.17
9.	Photovoltaic Domestic lighting units (Nos.)	11,310	—	—	0.45
10.	Photovoltaic Street Lights (Nos.)	28,699	—	—	2.87
11.	Wind Pumps (Nos.)	2,916	—	0.003732	—
12.	Wind Farms (MW)	41.25	—	—	41 25
13.	Mini-Micro Hydro (MW)	86	—	—	86.00
14.	Urjagram Energy Surveys (Nos.)	1,557	—	—	—
15.	Urjagram Projects (Nos.)	155	—	—	—
16.	Biomass Energy Plantations (Hectares)	17,110	0.3422	—	—
17.	Biomass Gasifiers/Sterling (Nos) Engines	1,000	—	0 001965	—
18.	Battery Operated Vehicles (Nos.)	154	—	0.000505	—
19.	Alcohol Operated Vehicles (Nos.)	25	—	0.000063	—

Statement-II

Programme-wise Financial Outlays and Physical Targets for 8 th Plan 1992—97

Sl. No.	Programmes	Approved Outlays (Rs. in Crores)	Tentative Physical Targets
1	2	3	4
1.	Biogas Development Programme	320.00	
	(a) Family Size Plants		7.50 lakh Nos.
	(b) CBP/IBP/NBP		450 Nos.
2.	Improved Chulha Programme	80.00	100 lakh Nos.
3.	Solar Thermal Programme	80.00	
	(a) Solar Thermal Energy Systems		2.75 lakh m² Coll. Area
	(b) Solar Cookers		3.00 lakh Nos.
4.	Solar Photovoltaic Programme	90.00	
	(a) SPV Lighting Systems		25,000 Nos.
	(b) SPV Water Pumps		600 Nos.
	(c) Other SPV Systems		1720 KW
5.	Wind Energy Programme	90.00	
	(a) Wind Pumps		4000 Nos.
	(b) Wind Battery Chargers		500 Nos.
	(c) Wind Power		100 MW*

1	2	3	4
6.	Urjagram (Surveys)	1 00	
7.	Biomass Development Programme	15 00@	
8.	Human and Animal Energy Programme	1.00	
9.	Bioenergy Development Programme	20.00	300 MW*
10.	Small Hydel Power Development Programme	100.00	200 MW*
11	Alternate Fuels for Surface Transportation	10.00	
12	Magneto Hydro Dynamics	10.00	
13.	Geo-thermal Energy		
14.	Chemical Sources of Energy		
15.	Ocean Energy		
16.	Hydrogen Energy		
17.	Indian Renewable Energy Development Agency Ltd.	10.00	
18.	Regional Offices etc.	10.00	
19.	Information & Publicity		
20.	Seminars/Conferences		
21.	International Cooperation		
22.	Data Bank/TIFAC		
23.	Solar Energy Centre	15.00	
24.	Special Area Programmes & Demonstration Activities	5.00	
	TOTAL:	857.00	

©Includes Biomass Gasifiers; * Includes Private Sector.

Generation and distribution of Solar and wind energy during Eighth Five Year Flan

1295. SHRI KAMAL MORARKA : Will the PRIME MINISTER be pleased to state :

(a) whether any target has been fixed for the generation and distribution of solar and wind energy during the Eighth Five Year Plan;

(b) If so, the details thereof and the achievements made so far;

(c) whether any new strategy has been evolved to harness energy for power generation from non-conventional sources; and

(d) if so, the details thereof ?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES WITH ADDITIONAL CHARGE OF THE MINISTER OF STATE OF THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR) : (a) During the Eighth Plan period, installation of 100 MW of solar photovoltaic systems, 2.75 lakh sq. metres of solar thermal based devices and three lakh solar cookers is envisaged.

(b) Ministry of Non-Conventional Energy Sources is implementing a countrywide demonstration and extension programme for the utilisation of solar and wind energy through various applications such as solar lights, solar pumps, solar power plants, solar water heaters, solar cookers and wind electric generators. Over 42,000 solar photovoltaic systems, 25,000 solar thermal systems, 2.27 lakh solar cookers and 45 MW wind electric generators have been deployed in the country so far.